NAPLEX Formula and Calculation Reference Sheet

Note: This is intended as a quick-reference for commonly used formulas and calculations relevant to the NAPLEX exam. It is not a comprehensive resource.

COMMON CONVERSIONS

Weight:
1 oz = 28.4 g
1 lb = 16 oz = 454 g
1 kg = 2.2 lbs
1 grain = 65 mg

Volume:
1 mL = 20 drops
1 tsp = 5 mL
1 tbsp = 15 mL
1 fluid oz = 30 mL
1 cup = 8 fluid oz = 240 mL
1 pint = 2 cups = 480 mL
1 quart = 2 pints = 960 mL
1 gallon = 4 quarts = 3,840 mL

Height:
1 inch = 2.54 cm
100 cm = 1 meter

Temperature:
°C to °F = (°C × 9/5) + 32
°F to °C = (°F − 32) × 5/9

BODY METRICS

BMI = weight in kg / (height in meters)^2

Body Surface Area (Mosteller) = $\sqrt{\text{(height in cm} \times \text{weight in kg) / 3,600}}$

CREATININE CLEARANCE (CrCl)

CrCl = [(140 - age) × weight (kg)] / (72 × SCr) × 0.85 if female

Ideal Body Weight (IBW):
- Males = 50 + 2.3 × (inches over 5 feet)
- Females = 45.5 + 2.3 × (inches over 5 feet)

Adjusted Body Weight (AdjBW) = IBW + 0.4 × (TBW - IBW)

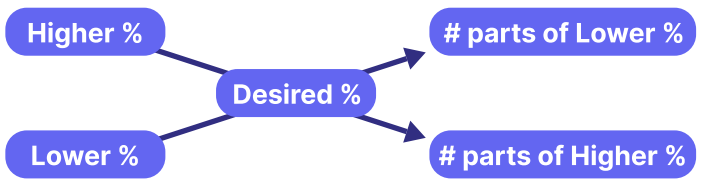
SERUM ELECTROLYTES

Anion Gap = Na - Cl - HCO3

Corrected Calcium = Measured Ca + [0.8 × (4 - albumin)]

Corrected Sodium = Na + 0.024 × (glucose - 100)

ALLIGATION METHOD



Step 1: Identify the concentrations
- Higher concentration
- Lower concentration
- Desired concentration
- Total amount to prepare

Step 2: Determine the number of parts
Higher % - Desired % = # parts of the Lower %
Desired % - Lower % = # parts of the Higher %

Step 3: Add the parts
Parts of Lower % + Parts of Higher % = # total parts

Step 4: Calculate how much of the Higher % to use
parts of the Higher % / # total parts = X / total amount

Step 5: Calculate how much of the Lower % to use
parts of the Lower % / # total parts = X / total amount

Step 6: Check that the two amounts add up to the desired amount
Amount of Lower % + Amount of Higher % = total amount

CHEMISTRY

mol = grams / molecular weight (MW) **mmol** = mg / MW

% w/v = g / 100 mL **% v/v** = mL / 100 mL **% w/w** = g / 100 g

Molarity (mol/L) = moles of solute / liters of solution
Molality (mol/kg) = moles of solute / kg of solvent
Osmolarity (mOsmol/L) = molarity x number of dissociated particles x 1,000

Milliequivalents (mEq) = (mg × valence) / MW

Specific gravity (SG) = weight (g) / volume (mL)

Dilution and concentration: C1 x V1 = C2 x V2

Sodium chloride equivalent (E value) = (58.5 × i) / (MW × 1.8)
- i = number of dissociated particles

PHARMACOKINETICS

Bioavailability (F) = (AUC oral / AUC IV) × (Dose IV / Dose oral)

Volume of distribution (Vd) = Amount of drug in body / Plasma concentration

Clearance (Cl) = (F × Dose) / AUC

Half-life (t½) = (0.693 × Vd) / Cl

Elimination rate constant (Ke) = Cl / Vd

Concentration at time t (Ct) = C_0 × e^(-kt)
- C_0 = the initial concentration (when time = 0)
- e = the base of the natural logarithm
- k = the elimination rate constant (units: 1/time, e.g., hr^{-1})
- t = time since the drug was administered

NUTRITION

Enteral nutrition calories:
- Carbohydrates = 4 kcal/g
- Protein = 4 kcal/g
- Fat = 9 kcal/g
- Alcohol = 7 kcal/g

Parenteral nutrition calories:
- Dextrose: 3.4 kcal/g
- Amino acids: 4 kcal/g
- Lipid emulsions:
  - 10% = 1.1 kcal/mL
  - 20% = 2 kcal/mL
  - 30% = 3 kcal/mL

Nitrogen intake (g) = Protein (g) / 6.25

BIOSTATISTICS

RRR = 1 - (risk % in treatment group / risk % in control group)

ARR or ARI = | risk % in treatment group - risk % in control group |

NNT = 1 / ARR (as decimal) **NNH** = 1 / ARI (as decimal)

ODDS RATIO (OR)	Outcome Present	Outcome Absent
Exposure Present	A	B
Exposure Absent	C	D

OR = (A x D) / (B x C)

ARI: absolute risk increase **NNH:** number needed to harm **RRR:** relative risk reduction
ARR: absolute risk reduction **NNT:** number needed to treat

References available at pyrls.com

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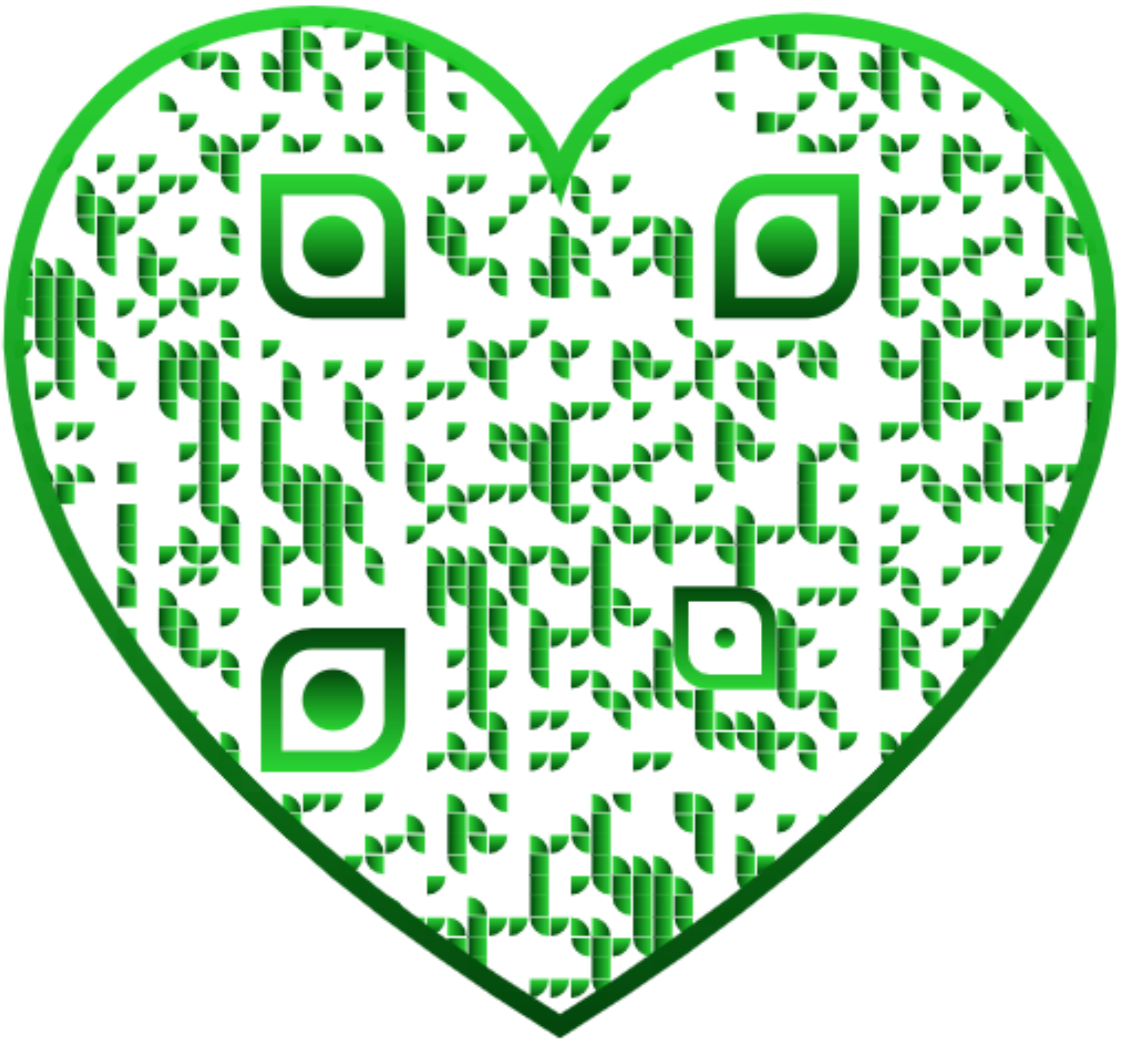
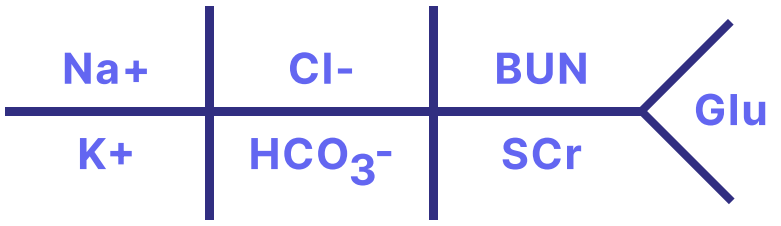
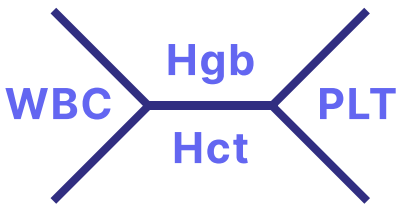


Lab Value Reference for Adults





BASIC METABOLIC PANEL (BMP)

LAB VALUE	REFERENCE RANGE
Sodium Na+	136-144 mmol/L
Chloride Cl-	96-106 mmol/L
Blood Urea Nitrogen BUN	6-20 mg/dL
Potassium K+	3.7-5.2 mmol/L
Bicarbonate HCO_3^-	23-29 mmol/L
Serum Creatinine SCr	0.8-1.2 mg/dL
Glucose, fasting Glu	70-99 mg/dL

ADDITIONAL ELECTROLYTES

LAB VALUE	REFERENCE RANGE
Calcium, free Ca^{2+}(free)	4.8-5.6 mg/dL
Calcium, total Ca (total)	8.5-10.2 mg/dL
Magnesium Mg	1.7-2.2 mg/dL
Phosphorus P	2.8-4.5 mg/dL

LIPIDS

LAB VALUE	REFERENCE RANGE
Total cholesterol TC	<200 mg/dL
Low-density lipoprotein LDL	<100 mg/dL
High-density lipoprotein HDL	Females: >50 mg/dL Males: >40 mg/dL
Triglycerides TGL	<150 mg/dL

ARTERIAL BLOOD GAS

LAB VALUE	REFERENCE RANGE
Oxygen saturation O_2Sat	94-100%
Partial pressure of oxygen PaO_2	75-100 mmHg
Partial pressure of carbon dioxide CO_2	38-42 mmHg
pH level pH	7.38-7.42

COMPLETE BLOOD COUNT (CBC)

LAB VALUE	REFERENCE RANGE
White blood cells WBC	4.5-11.0 × 10^9/L
Hemoglobin Hgb	Females: 12.1-15.1 g/dL Males: 13.8-17.2 g/dL
Hematocrit Hct	Females: 36.1-44.3% Males: 40.7-50.3%
Platelets PLT	150-450 × 10^9/L
Red blood cells RBC	Females: 4.2-5.4 × 10^{12}/L Males: 4.7-6.1 × 10^{12}/L
Mean corpuscular volume MCV	80-95 fL
Mean corpuscular hemoglobin MCH	27-31 pg/cell
Mean corpuscular hemoglobin concentration MCHC	32-36 g/dL

LIVER FUNCTION TESTS (LFTs)

LAB VALUE	REFERENCE RANGE
Alanine aminotransferase ALT	4-36 U/L
Aspartate aminotransferase AST	8-33 U/L
Alkaline phosphatase ALP	44-147 U/L
Albumin Alb	3.4-5.4 g/dL
Bilirubin, total TBil	0.1-1.2 mg/dL
Gamma-glutamyl transferase GGT	5-40 U/L
Lactate dehydrogenase LDH	105-333 IU/L
Prothrombin time PT	11-13.5 seconds
International normalized ratio INR	0.8-1.1

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